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Testing the Accuracy of Gravitational Waveforms Computed with SpECTRE[1] SIERRA THOMAS, California State University, Fullerton, SIMULATING EXTREME SPACETIMES COLLABORATION — Next-generation gravitational-wave detectors will require modelled gravitational waveforms with substantially higher accuracy than current numerical or analytic models provide. The Simulating eXtreme Spacetimes collaboration is developing an open-source numerical-relativity code, called SpECTRE, that uses the Discontinuous Galerkin method and task-based parallelism to achieve greater speed and accuracy by scaling to many more compute cores. In this talk, I will discuss simulations for a perturbed, ringing black hole in SpECTRE. The simulations run a Cauchy evolution of perturbed-black-hole initial data in parallel with a Cauchy characteristic evolution that calculates the emitted gravitational waves at null infinity. I will present results assessing the computational efficiency of the simulations across several nodes and the accuracy of the simulated gravitational waveforms.

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